99

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,438	12/04/2003	Bradley L. Hunter	GSIL 0175 PUS 1	6849

22045 7590 11/28/2005

BROOKS KUSHMAN P.C.
1000 TOWN CENTER
TWENTY-SECOND FLOOR
SOUTHFIELD, MI 48075

EXAMINER	
SHECHTMAN, SEAN P	
ART UNIT	**PAPER NUMBER**
2125	

DATE MAILED: 11/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/727,438	HUNTER ET AL.	
	Examiner	Art Unit	
	Sean P. Shechtman	2125	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 August 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21-48* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21-48* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/4/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 21-48 are presented for examination. Claims 1-20 have been cancelled.

Information Disclosure Statement

2. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered (See page 8, line 16).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 21-48 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. The term "near" in claims 21 and 32 is a relative term which renders the claim indefinite. The term "near" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The location of microstructures has been rendered indefinite by the use of the term near.

4. The term "substantially" in claims 21, 26, 29, 32, 36, 37, and 46, is a relative term which renders the claim indefinite. The term "substantially" is not defined by the claim, the

specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The optimum direction of movement sequence, the optimum cluster or cluster fragments, the optimum sequence, and the constant laser q-rate have been rendered indefinite by the use of the term substantially. The term "substantially" is often used in conjuncture with another term to describe a particular characteristic of the claimed invention. It is a broad term. In re Nehrenberg, 280 F 2d 161, 126 USPQ 383 (CCPA 1960). The court held that the limitation "to substantially increase the efficiency of the compound as a copper extractant" was definite in view of the general guidelines contained in the specification and the rest of the claim. In re Mattison 509 F .2d 563, 184 USPQ 484 (CCPA 1975). In this case, the instant specification and the rest of the claims fail to provide guidelines.

5. Claim 40 recites the limitation "the site to repair" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 21, 22, 25, 27, 30, 31, 32, 33, 36, 38-43, 47, 48, are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Pat. No. 6,239,406 to Onoma et al (hereinafter referred to as Onoma).

Referring to claims 21, 22, 30, 31, 32, 33, 47, 48, Onoma teaches a method and system for determining a sequence in which microstructures are to be processed at a laser-processing site positioning a laser beam and motor-driven stage (Abstract; Col. 2, lines 45-47; Col. 3, lines 35-38; Col. 3, lines 48-56), the method comprising:

receiving reference data which represent locations of microstructures to be processed at the site (Col. 1, lines 50-61; Col. 3, lines 41-48);

coalescing adjacent groups of microstructures into clusters of microstructures including edge clusters which contain microstructures located near the travel limits of a motor-driven stage (Fig. 1, elements 3 & 2; Col. 3, lines 4-7; Col. 1, line 50 – Col. 2, line 4; Col. 4, lines 20-26; Col. 4, lines 20-22; Col. 5, lines 51-52; Col. 6, lines 59-63; Col. 7, lines 46-51; Col. 8, lines 19-24), said motor-driven stage moves the microstructures relative to a laser beam at the site (Col. 3, lines 19-32).

dividing a cluster fragment from each edge cluster wherein the cluster fragments have a respective direction of movement and link sorting (Fig. 1, elements 3 & 2; Col. 2, lines 56-58; Col. 3, lines 4-7; Col. 3, lines 41-48; Col. 4, lines 20-26; Col. 5, lines 30-35); and

sorting the clusters and cluster fragments to obtain data which represent a substantially optimum direction of movement sequence in which the microstructures are to be processed to increase throughput at the site (Fig. 4, elements S1012-S1016; Col. 1, lines 46-61; Col. 2, lines 4-7; Col. 3, lines 20-32).

Referring to claims 25, 36, Onoma discloses the method above wherein each of the cluster and cluster fragments has a plurality of possible processing directions and wherein the step of sorting includes the step of determining a substantially optimum direction in which to

process the microstructures (Col. 1, lines 45-61; Col. 2, lines 56-58; Col. 3, lines 20-41 and lines 48-56; Col. 4, lines 23-26 and lines 66-67; Col. 5, lines 4-5 and lines 51-57).

Referring to claims 27, 38, Onoma discloses the method above wherein the microstructures are located on dice of a wafer (Col. 1, lines 11-24).

Referring to claim 39, Onoma discloses the subsystem above wherein the microstructures are conductive lines of the dice (Col. 1, lines 11-18).

Referring to claim 40-43, Onoma discloses the subsystem above wherein the dice are semiconductor memory devices and wherein the conductive lines are to be ablated at the site to repair defective memory cells of the devices (Col. 1, lines 11-18).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 24, 35, 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,239,406 to Onoma as applied to claims 21, 22, 25, 27, 30, 31, 32, 33, 36, 38-43, 47, 48, above, and further in view of U.S. Patent No. 4,555,610 to Polad et al (hereinafter referred to as Polad).

Referring to claims 24, 35, 44, Onoma discloses the method and subsystem above with a motor-driven stage (Col. 3, lines 20-32; Col. 4, lines 4-7), wherein the stage is an x-y stage (Abstract; Col. 1, lines 19-25).

Referring to claims 24, 35, 44, Onoma fails to disclose the method and subsystem above wherein the step and means of sorting sorts based on energy expended in at least one coil of at least one motor in response to motor commands.

However, referring to claims 24, 35, 44, Polad discloses a machining system utilizing a laser beam for machining a stationary workpiece, comprising control logic means for generating first, second and third command signals to move the laser beam across the workpiece in accordance with a machining program, and including laser control means for generating command signals for varying the intensity of the laser beam in accordance with the machine program to match the machining characteristics of the laser beam to the stored characteristics of the workpiece. Wherein the movement of each of the optical path means along its axis is produced by a lead screw aligned with the axis of each of the respective optical path means and driven by a servo motor in response to velocity command signals for that axis generated by the control logic. Wherein the laser control means is constructed and arranged for varying the laser beam intensity each time that a block of the machining program is executed (Col. 9, lines 61-64; Col. 10, lines 23-32 and lines 63-68; Col. 12, lines 15-19).

Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the laser machining system of Onoma to include the method and system of Polad wherein the step and means of sorting sorts based on energy expended in at least one coil of at least one motor in response to motor commands, because Polad teaches that the laser machining system is used to execute part programs in a fully automatic manner (Col. 9, lines 18-20), the machine has a wide variety of control options which may be carried out by various programmed subroutines, a single line of input code allows the operator to produce a desired string of characters on a part, the programming can be used to operate the laser power source in a pulsed mode, the programming may be used to conveniently set the distance between output pulses and the width of pulses, and the laser power output may be programmed to change during the program, wherein the transition from one power level to another can be selected to be a step change or a ramp change, as desired (Col. 9, lines 45-59).

8. Claims 26, 37, are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,239,406 to Onoma as applied to claims 21, 22, 25, 27, 30, 31, 32, 33, 36, 38-43, 47, 48, above, and further in view of U.S. Patent No. 5,971,588 to Scepanovic (hereinafter referred to as Scepanovic).

Referring to claims 26, 37, Onoma discloses the method and means above for determining a plurality of possible sequences for processing the clusters and cluster fragments and selecting a substantially optimum sequence from the plurality of possible sequences (Col. 1, lines 45-61; Col. 2, lines 56-58; Col. 3, lines 20-41 and lines 48-56; Col. 4, lines 23-26 and lines 66-67; Col. 5, lines 4-5 and lines 51-57).

Referring to claims 26, 37, Onoma fails to disclose the step and means for sorting includes the steps and means for selecting a substantially optimum cluster or cluster fragment to be initially processed at the site.

However, referring to claims 26, 37, Scepanovic discloses a system and method for placement of cells on integrated circuit chips providing an optimal cluster of cells on the surface of a semiconductor chip. The system collects a predetermined quantity of cells, this predetermined quantity containing a center cell, and all cells are assigned a distance value from the center cell. A coordinate is assigned to each cell based on its associated distance value, and new cell positions are calculated based on related cell positions and weights associated with each cell (Abstract; Col. 1, lines 7-25).

Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the laser machining system of Onoma to include the method and system of Scepanovic, wherein the step and means for sorting includes the steps and means for selecting a substantially optimum cluster or cluster fragment to be initially processed at the site, because it provides means for efficiently partioning cells such that the total interconnect wirelength is minimized, and means for allowing cells to move between clusters as optimization proceeds (Col. 5, lines 8-68).

Double Patenting

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., In re Berg, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); In re Goodman, 11 F.3d 1046, 29

USPQ2d 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 21 and 32 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 3 and 12 of U.S. Patent No. 6,662,063 to Hunter et al. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim(s) 21 and 32 are generally broader than the claims in the parent application. Broader claims in a later application constitute obvious double patenting of narrow claims in an issued patent. See In re Van Ornum and Stang, 214, USPQ 761, 766, and 767 (CCPA) (The court sustained an obvious double patenting rejection of generic claims in a continuation application over narrower species claims in an issued patent) ; In re Vogel, 164 USPQ 619, 622, and 623 (CCPA 1970) (Generic application claims specifying "meat" is obvious double patenting of narrow patent claims specifying "pork").

Conclusion

10. The prior art or art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents or publications are cited to further show the state of the art with respect to large range motion high-speed scanning useful for achieving high manufacturing throughput with a trajectory planner that receives a description of a desired trajectory between positions at which a device is to be processed.

U.S. Pat/Pub. No. 6,744,228 to Cahill et al (Col. 1, lines 17-20; Col. 13, lines 42-50).

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean P. Shechtman whose telephone number is (571) 272-3754. The examiner can normally be reached on 9:30am-6:00pm, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo P. Picard can be reached on (571) 272-3749. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

J N Gandhi

Jayprakash N. Gandhi
Primary Examiner 2127
Technology Center 2800

SPS

Sean P. Shechtman

November 21, 2005